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Miners' Safety and Health Almanac

DEPARTMENT OF THE INTERIOR
ALBERT B. FALL, SECRETARY

BUREAU OF MINES
H. POSTER BAIN, DIRECTOR

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DEPARTMENT OF THE INTERIOR

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BUREAU OF MINES

H. FOSTER BAIN, DIRECTOR

SAFETY AND HEALTH ALMANAC FOR 1922

Published in cooperation with
UNITED STATES PUBLIC HEALTH SERVICE

For the use of miners

COMPILED BY

R. C. WILLIAMS

Passed Assistant Surgeon, United States Public Health Service



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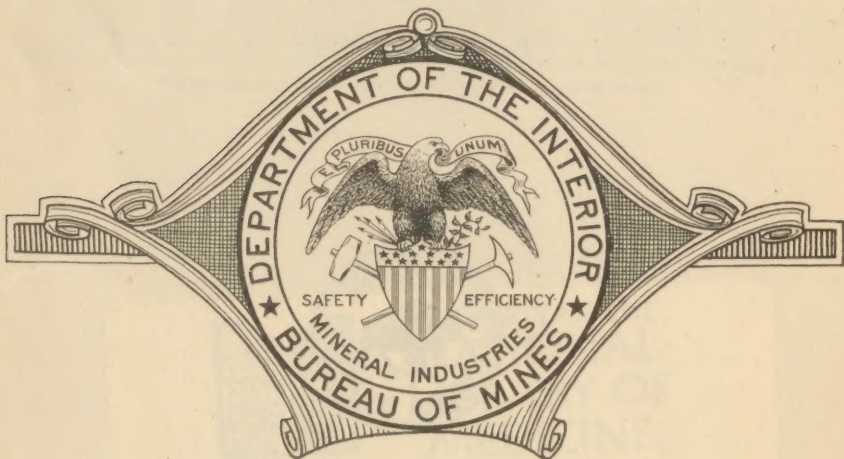
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First edition, December 1, 1921.



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MINERS' SAFETY AND HEALTH ALMANAC FOR 1922.

Compiled by R. C. Williams.

INTRODUCTION.

The Bureau of Mines was established in 1910, following a series of disastrous mine accidents, and was charged by Congress with specific responsibility for bettering health conditions and lessening accidents in the mines.

The first decade of the bureau's history has been completed with a record of constant decrease in the accident rate in the mining industry. The bureau claims no exclusive credit for this record, feeling that the hearty cooperation received from operators, inspectors, and miners, and especially the desire of the miners themselves to work safely, has been mainly responsible for the decrease.

Safety methods can not be taught by force. Safety can be achieved only when the miner realizes that the happiness and welfare of his family depend on his safe return at the completion of his day's work.

Although the Bureau of Mines, from time to time, has issued publications dealing with the prevention of accidents and sickness, and recognizes that the responsibility for safety underground and in the works rests with the men, it feels also that the miner's family may desire a daily reminder of the need of constant watchfulness in achieving safety.

With this purpose in view, the Bureau of Mines has published annually a Safety and Health Almanac. The almanac for 1922, the fourth of the series, is sent to you in the hope that it will remind you daily of the need for your own cooperation in making mines safe and healthful places in which to work.

H. FOSTER BAIN,
Director, United States Bureau of Mines.

AVOID SELF-MEDICATION.

Miners sometimes acquire the habit of taking various so-called harmless drugs for any and all conditions. This practice is pernicious and often leads to serious results.

Usually, and quite naturally so, the use of drugs in this manner does not relieve the condition complained of, because the medication is not directed toward the cause of the trouble.

The miner who takes medicine of his own prescribing is making his own diagnosis. Self-drugging means self-diagnosis. This is a grave error. The average person who attempts self-drugging tries to treat the **symptoms**, which he frequently mistakes for the disease producing the symptoms. The effort is made to treat headache, backache, constipation, or some other annoying symptom without finding out the disease that is responsible for the symptom. Constipation, shortness of breath, weakness, headache, backache, rise of temperature are symptoms; they are not diseases.

Persons who are not well and who suffer from disagreeable or annoying symptoms should consult a competent physician and request a thorough examination. Many serious conditions begin insidiously and often make considerable progress before noticeable symptoms are produced; incipient pulmonary tuberculosis, beginning Bright's disease, cancer, and certain forms of heart disease are examples. The point to be emphasized is that when one is sick, a qualified physician should be consulted, and every person, whether sick or well, should have a complete physical examination, including teeth, made every year.

A PERFECT MINE.

There is one perfect mine and mining town.

Every official of this mine and every man employed underground or on top always does his work well and never breaks the safety rules. There are never any accidents at this mine, nothing ever goes wrong, the working conditions are fine. Everybody is contented and happy, no one quits or gets fired. There is work every day and the pay is good.

The town is clean and sanitary; the houses are comfortable; there is a good school; there is never any sickness; all the prices are reasonable; no one ever offends his neighbor; and all is peace and contentment.

This is the Ideal Mine, located in Modeltown, Progressive County, State of Good Health.

Your mine and mining town perhaps do not measure up to the standard set by the Ideal Mine at Modeltown, but if everyone will strive each day to reach that end, you can come close to it.



First month

JANUARY

31 Days

MOON'S PHASES.	EASTERN TIME.			MOON'S PHASES.	EASTERN TIME.		
	D.	H.	M.		D.	H.	M.
First Quarter	6	5	23.8 A. M.	Last Quarter	20	12	59.8 A. M.
Full Moon	13	9	36.5 A. M.	New Moon	27	6	48.2 P. M.

Day of month.	Day of week.	SAFETY HINTS AND HISTORICAL EVENTS.	Sun rises.	Sun sets.
1	Sun.	New Year's Day. National holiday.	A. M. 7. 19	P. M. 4. 48
2	Mon.	Profit by the experience of others.	7. 19	4. 49
3	Tue.		7. 19	4. 50
4	Wed.		7. 19	4. 51
5	Thu.		7. 19	4. 52
6	Fri.		7. 19	4. 52
7	Sat.	Mine disaster, mine No. 11, Krebs, Okla., 1892. Lives lost, 100.	7. 19	4. 53
8	Sun.	Consult a physician when ill; do not put it off.	7. 19	4. 54
9	Mon.		7. 19	4. 55
10	Tue.		7. 19	4. 56
11	Wed.	Home remedies are all right, but do not wait too long to see a doctor.	7. 19	4. 57
12	Thu.		7. 19	4. 58
13	Fri.	A prop in place is worth a thousand on the timber pile.	7. 18	4. 59
14	Sat.		7. 18	5. 00
15	Sun.		7. 18	5. 01
16	Mon.	Eighteenth amendment to United States Constitution proclaimed, 1919 (Prohibition).	7. 17	5. 02
17	Tue.	Always consider yourself a member of the general safety committee.	7. 17	5. 03
18	Wed.		7. 17	5. 05
19	Thu.	James Watt, inventor of steam engine, born 1736.	7. 16	5. 06
20	Fri.		7. 16	5. 07
21	Sat.		7. 15	5. 08
22	Sun.		7. 15	5. 09
23	Mon.		7. 14	5. 10
24	Tue.	United Mine Workers of America organized, 1890.	7. 13	5. 11
25	Wed.		7. 13	5. 12
26	Thu.	First settlement in Australia, 1788.	7. 12	5. 14
27	Fri.	Samuel Gompers, president American Federation of Labor, born 1850.	7. 11	5. 15
28	Sat.		7. 11	5. 16
29	Sun.		7. 10	5. 17
30	Mon.		7. 09	5. 18
31	Tue.	Every miner must be a safety man.	7. 08	5. 19

Insure your health by periodic physical examinations.

THE MINERS' CONTEMPT OF DANGER.

Some one has said that "familiarity breeds contempt," and perhaps in no occupation is this saying truer than in mining.

Men face dangerous conditions day after day without being killed or getting hurt, and they gradually come to think that they are immune, "born under a lucky star," as they might put it. It is then that the chances of injury increase manyfold, not only to themselves but to their fellow workmen.

The writer recalls that many years ago the division engineer of a large coal company in the Eastern coal fields made it a point to go, with a naked light, beyond a danger board, in order to impress his subordinates with his superior knowledge. Many a miner has ignited a pocket of gas in the presence of those who, in his opinion, were his inferiors in the wisdom of the mine. No doubt the gratification of selfish vanity has caused many a death. For the momentary pleasure of "showing off" before his admiring comrades, many a man has sacrificed a limb, if not his life.

This contempt of danger sometimes causes some peculiar attitudes of mind. A foreman in a Southern coal mine was told that there was explosive gas in a certain district in his mine and he proceeded, with the assistance of five men, to arrange for its removal. An explosion occurred, wrecking that part of the mine. Afterward this mine foreman was found in the very room in which gas had been reported, his safety lamp taken apart and six matches in his pockets. He and his companions died because of his idea that he could light his lamp in the presence of gas. Probably he had done it before and thought he could do it any time he pleased.

The laws of nature are unchangeable, rocks will fall, gas will ignite, and no man can successfully defy these laws.

If one is willing to take a chance himself, he should regard at least the rights of others, his family, his fellow workmen, or the community in which he lives, who may be compelled to bear the burden and to pay the price of his folly, but yet have no say in the matter of his taking the chance.

Eternal vigilance is the price of safety as well as the price of liberty, and it behooves each and every one of the men who labor underground to see to it that as far as he is concerned, no unnecessary chance is taken.

GEORGE S. RICE,
Chief Mining Engineer, United States Bureau of Mines.



MOON'S PHASES.			EASTERN TIME.			MOON'S PHASES.			EASTERN TIME.		
	D.	H.	M.				D.	H.	M.		
First Quarter.....	4	11	52.3 P. M.			Last Quarter.....	18	1	18.1 P. M.		
Full Moon.....	11	8	17.5 P. M.			New Moon.....	26	1	47.7 P. M.		

Day of month.	Day of week.	SAFETY HINTS AND HISTORICAL EVENTS.	Sun rises.	Sun sets.
			A. M.	P. M.
1	Wed.	Screw propeller for steamships patented by John Ericsson, 1838.	7. 07	5. 20
2	Thu.	Texas, New Mexico, Arizona, and California ceded by Mexico to the United States, 1848.	7. 06	5. 22
3	Fri.	Diplomatic relations with Germany broken, 1917.	7. 06	5. 23
4	Sat.		7. 05	5. 24
5	Sun.		7. 04	5. 25
6	Mon.		7. 03	5. 26
7	Tue.	Long-distance telephone between New York and Chicago opened, 1892.	7. 02	5. 27
8	Wed.	Gen. William T. Sherman born, 1820.	7. 01	5. 29
9	Thu.	United States Weather Bureau established, 1870.	7. 00	5. 30
10	Fri.		6. 58	5. 31
11	Sat.		6. 57	5. 32
12	Sun.	Abraham Lincoln born, 1809.	6. 56	5. 33
13	Mon.		6. 55	5. 34
14	Tue.	St. Valentine's Day.	6. 54	5. 35
15	Wed.	Battleship <i>Maine</i> sunk in Havana harbor, 1898.	6. 53	5. 37
16	Thu.	Before you begin work look for the fire boss's mark.	6. 51	5. 38
17	Fri.		6. 50	5. 39
18	Sat.		6. 49	5. 40
19	Sun.	Thomas A. Edison patented phonograph, 1878.	6. 48	5. 41
20	Mon.		6. 46	5. 42
21	Tue.		6. 45	5. 43
22	Wed.	George Washington born, 1732. National holiday.	6. 44	5. 44
23	Thu.		6. 42	5. 45
24	Fri.		6. 41	5. 46
25	Sat.	First patent for revolver granted Samuel Colt, 1836.	6. 40	5. 48
26	Sun.		6. 38	5. 49
27	Mon.		6. 37	5. 50
28	Tue.	Take no undue risk at any time.	6. 35	5. 51

Every day should be safety day.

THE PHYSICAL NEEDS OF A MINER COMING OFF SHIFT.

Health is the miner's greatest asset, and he should guard it well. Good habits of sleeping, eating, dressing, and bodily cleanliness, both internal and external, are aids in maintaining health. Many of the mining companies have change houses well equipped with washing and bathing facilities, latrines, and lockers, enabling miners to give proper attention to their physical needs after work in mines that may be damp or wet.

A large number of miners fail to realize the importance of giving proper care to their bodies on coming off shift. During work, the body accumulates wastes that must be eliminated. The skin is one of the organs through which these wastes are thrown out, in the form of sweat. As the clothes become saturated with sweat and dirt, the pores of the skin are clogged, and the bowels and kidneys have to assume the extra burden of doing the work that the skin fails to do. This condition results in the waste remaining as poisons in the body for a longer period than usual, and the body's resistance to disease is thus lowered. The clogged condition of the pores also makes it difficult for air to be taken in through the skin, and an important channel through which fresh air is brought into the body is cut off. If a miner goes home in this condition he is exposing himself to a bad cold or pneumonia and all the ills that may follow such diseases. He can eliminate this danger, however, by making proper use of the change house. He may dislike the delay in getting home, but he ought to remember that a serious case of pneumonia, and even death, may be averted by a few simple precautions.

The miner should waste no time in getting out of his work clothes, which are damp and saturated with sweat. A good shower bath should be taken immediately. Warm water is best for this purpose, and the body should be well lathered with a good soap, in order to remove all dirt and perspiration from the pores. It is advisable to finish with cool water, about 60° to 65° F.; then follow with a vigorous rub down with a Turkish towel, until the body is glowing red. A complete change of clothes will take only a few minutes' time, and the miner will be more than repaid by the refreshment and the feeling of self-respect which result from a clean and well-kept body.

C. E. KINDALL,

Car Surgeon, United States Bureau of Mines.



MOON'S PHASES.		EASTERN TIME.		MOON'S PHASES.		EASTERN TIME.			
		D.	H.	M.			D.	H.	M.
First Quarter.....		6	2	21.6 P. M.	Last Quarter.....		20	3	43.0 A. M.
Full Moon.....		13	6	14.4 A. M.	New Moon.....		28	8	3.4 A. M.

Day of month.	Day of week.	SAFETY HINTS AND HISTORICAL EVENTS.	Sun rises.	Sun sets.
1	Wed.	Take care of your health.	A. M.	P. M.
2	Thur.		6. 34	5. 52
3	Fri.		6. 33	5. 53
4	Sat.	President Warren G. Harding inaugurated, 1921.	6. 31	5. 54
5	Sun.		6. 30	5. 55
6	Mon.		6. 28	5. 56
7	Tue.	The change house is for your convenience; use it.	6. 27	5. 57
8	Wed.		6. 25	5. 58
9	Thur.		6. 24	5. 59
10	Fri.	Mine explosion, Courrières, France, 1906. Persons killed, 1,060.	6. 22	6. 00
11	Sat.	Avoid sudden chilling when coming on top in wet clothes.	6. 21	6. 01
12	Sun.		6. 18	6. 03
13	Mon.		6. 16	6. 04
14	Tue.		6. 14	6. 05
15	Wed.	Czar Nicholas II of Russia abdicates the throne, 1917.	6. 13	6. 06
16	Thur.		6. 11	6. 07
17	Fri.		6. 10	6. 08
18	Sat.	St. Patrick's Day.	6. 08	6. 09
19	Sun.	Do not go home in wet digging clothes. Use the change house.	6. 07	6. 10
20	Mon.		6. 05	6. 11
21	Tue.		6. 04	6. 12
22	Wed.		6. 02	6. 13
23	Thur.		6. 00	6. 14
24	Fri.		5. 59	6. 15
25	Sat.		5. 57	6. 16
26	Sun.		5. 56	6. 17
27	Mon.		5. 54	6. 18
28	Tue.		5. 53	6. 19
29	Wed.		5. 51	6. 20
30	Thur.		5. 49	6. 21
31	Fri.	Commit no sanitary nuisance in the mine.	5. 48	6. 22

For health and comfort use the change house.

HOW TO GET PRETTY WHITE HAIR.

Of course, everybody wants to have a head of white hair so that he will be distinguished looking. Everybody naturally wants to look distinguished, and white hair does it.

There are plenty of happenings in the metal miner's life that ought to turn his hair white even if they do not. One of the simplest recipes for getting this result is to sink a shaft about a thousand feet, timbering as you go. Don't be too particular about the timbering, because a miner is always in a hurry to reach the ore, and he never has the money or time to do things right from the start. Don't be fussy about the guides. They are only put there for looks, and if their gage is poor and alignment crooked, never mind; they can be fixed up when the sinking bucket and crosshead are replaced by the permanent cage.

If the foregoing instructions are followed, it is quite probable that some night, about 11 o'clock, when you are taking down the powder to shoot the cut, you will suddenly find that the crosshead has left you. You will know immediately that it has not gone far, but you won't know just how far, nor just when it will suddenly come back to you. In fact, you will be hanging in considerable doubt, not to say anxiety. You will be perfectly free to do anything you want to do and can do. Probably you will reach gingerly out, groping for the bellcord, and give one bell, together with a high-pressure prayer that the hoist man will ease up to a stop and not jerk her. If he does, and you are still there, you will slide out onto the closest wall plate like a snake on rubber wheels, and gently give another bell. Then you will hold your breath and listen as you never listened before, while the dangling bucket disappears into the darkness above. If your luck holds, and the hung-up crosshead holds on the guides until the bucket picks it up, doubtless you will be rescued from your perch after a while, and you will finally get the cut round off about 2 a. m. If your luck doesn't hold, the little matter of the cut round won't bother you.

If the foregoing method does not turn your hair white, there are other methods you can try in shaft sinking, but it isn't necessary to try more than one at a time.

Of course, there are crosshead attachments that are supposed to hold the crosshead to the bucket until positively released; and also the guides can be properly aligned and gaged. But that would be too simple, and besides would spoil a perfectly good chance of getting pretty white hair.

M. VAN SICLEN,

Assistant Chief Mining Engineer, United States Bureau of Mines



MOON'S PHASES.		EASTERN TIME.			MOON'S PHASES.		EASTERN TIME.		
		D.	H.	M.			D.	H.	M.
First Quarter.....	5	12	45.6	A. M.	Last Quarter.....	18	7	53.7	P. M.
Full Moon.....	11	3	43.7	P. M.	New Moon.....	27	12	3.7	A. M.

Day of month.	Day of week.	SAFETY HINTS AND HISTORICAL EVENTS.	Sun rises.	Sun sets.
1	Sat.	All Fools' Day.	A. M. 5.46	P. M. 6.23
2	Sun.	First United States mint established, 1792.	5.45	6.24
3	Mon.		5.43	6.25
4	Tue.		5.42	6.26
5	Wed.		5.40	6.27
6	Thu.	War on Germany declared by the United States, 1917.	5.38	6.27
7	Fri.	No matter how great the hurry, always be careful.	5.37	6.28
8	Sat.		5.35	6.29
9	Sun.		5.34	6.30
10	Mon.		5.32	6.31
11	Tue.		5.31	6.32
12	Wed.	Confederates fired on Fort Sumter, 1861.	5.29	6.33
13	Thu.		5.28	6.34
14	Fri.	Good Friday.	5.26	6.35
15	Sat.		5.25	6.36
16	Sun.	Easter Sunday.	5.23	6.37
17	Mon.		5.22	6.38
18	Tue.		5.21	6.39
19	Wed.		5.19	6.40
20	Thu.	It always pays to do your work carefully and well.	5.18	6.41
21	Fri.		5.16	6.42
22	Sat.		5.15	6.43
23	Sun.		5.14	6.44
24	Mon.	Accidents and death are the price of carelessness.	5.12	6.45
25	Tue.	Never deface a signboard.	5.11	6.46
26	Wed.		5.10	6.47
27	Thu.	Mine explosion, Hastings, Colo., 1917; 122 killed.	5.08	6.48
28	Fri.		5.07	6.49
29	Sat.	Carbide containers should always be kept covered.	5.06	6.50
30	Sun.	Elevated railroads opened in New York, 1878.	5.04	6.51

Think less of time saved and more of risks taken.

THE TEETH AND THEIR CARE.

One of the most important factors in preserving the health of miners is care of the teeth. The teeth were placed at the gateway of the human body to prepare the food for digestion. With dirty, decayed, diseased, broken, or missing teeth we can not expect to chew our food so as to prepare it properly for digestion.

A well-cared-for mouth and teeth are a mark of character and a sign of careful attention to personal hygiene. A mouth filled with dirty, decayed, vile-smelling teeth is a reproach to any miner.

Children also should be taught at an early age to brush the teeth and keep them clean.

The teeth should be kept clean because clean teeth do not decay.

Every miner and members of his family should visit a dentist at least every six months and have a careful examination made. Whatever dental work the dentist finds is needed should be done at once. No one should wait for toothache to send him to the dentist.

PREVENTION OF FLIES.

Any campaign for destroying flies should be directed toward the elimination of their breeding places. The most common breeding place in many mining camps is the manure pile. The female fly lays her eggs in manure, filth, or garbage, and in about two weeks, except in cold weather, the larvæ develop into full-grown flies.

Stables should be cleaned out and manure piles moved at least every two weeks, in order to prevent the hatching of fly eggs. When manure is removed from the stable, it should, if practicable, be scattered in a field, and allowed to dry. Fly breeding may be prevented by the application of borax, using not over 1 pound to 16 cubic feet of manure, if the manure is to be used as a fertilizer. A better plan is to sprinkle the manure pile or stable with a solution of 2 pounds of copperas per gallon of water.

Battering the surface of a manure pile with a spade and thus consolidating the pile will prevent the breeding of many flies for the heating of the manure just below the surface by decomposition is then such that the larvæ are largely destroyed.

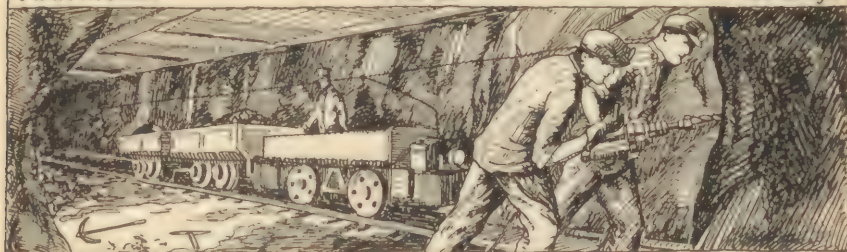
Manure is valuable as a fertilizer and, if possible, should always be used in such manner. When manure can not be utilized as a fertilizer, it should always be disposed of in a way to prevent the breeding of flies.

All other breeding places for flies in and around mining towns, as open privy vaults and accumulations of garbage, should be eliminated.

Fifth month

MAY

31 Days



MOON'S PHASES.		EASTERN TIME.		MOON'S PHASES.		EASTERN TIME.		
		D.	H.	M.		D.	H.	M.
First Quarter.....		4	7	55.8 A. M.	Last Quarter.....	18	1	16.9 P. M.
Full Moon.....		11	1	6.2 A. M.	New Moon.....	26	1	4.0 P. M.

Day of month.	Day of week.	SAFETY HINTS AND HISTORICAL EVENTS.	Sun rises.	Sun sets.
1	Mon.	American fleet victorious at Battle of Manila Bay, 1898. Keep the teeth clean and visit a dentist regularly.	A. M.	P. M.
2	Tue.		5. 03	6. 52
3	Wed.		5. 02	6. 53
4	Thu.		5. 01	6. 53
5	Fri.		5. 00	6. 54
6	Sat.		4. 59	6. 55
7	Sun.	<i>Lusitania</i> sunk, 1915.	4. 57	6. 56
8	Mon.	Flies spread filth and disease germs.	4. 56	6. 57
9	Tue.		4. 55	6. 58
10	Wed.		4. 54	6. 59
11	Thu.	Screens are very useful to keep out flies and mosquitoes.	4. 53	7. 00
12	Fri.		4. 52	7. 01
13	Sat.		4. 51	7. 02
14	Sun.	Go after the fly early. Destroy his wintering place.	4. 50	7. 03
15	Mon.		4. 49	7. 04
16	Tue.		4. 48	7. 05
17	Wed.		4. 47	7. 06
18	Thu.		4. 46	7. 07
19	Fri.	Fraterville mine disaster, Coal Creek, Tenn., 1902; 184 dead.	4. 46	7. 07
20	Sat.		4. 45	7. 08
21	Sun.		4. 44	7. 09
22	Mon.	The temporary teeth of children also require attention.	4. 43	7. 10
23	Tue.		4. 42	7. 11
24	Wed.		4. 42	7. 12
25	Thu.	Porfirio Diaz forced by revolutionists to resign presidency of Mexico, 1911.	4. 41	7. 13
26	Fri.		4. 40	7. 13
27	Sat.		4. 40	7. 14
28	Sun.		4. 39	7. 15
29	Mon.		4. 39	7. 16
30	Tue.	Memorial Day.	4. 38	7. 17
31	Wed.		4. 38	7. 17
			4. 37	7. 18

Swat the fly is good; destroy his breeding-place is better.

THE METAL MINER AND DUST.

Dust particles in air are undoubtedly one of the worst menaces to the health of metal-mine employees, yet it is only infrequently that adequate precautions are taken to prevent the formation of dust.

Unfortunately, the workers whose health is directly affected are the ones who are apt to resist the enforcement of measures designed to protect their health, and operators sometimes have to take drastic disciplinary measures before the workers will use the means provided for their own protection. This attitude of resistance by workers to the use of equipment for dust prevention gives reactionary mine officials an excuse for failing to enforce dust-prevention measures that they consider unnecessary, or even a useless fad.

As far as our present knowledge goes, the most dangerous dust is that of free silica—quartz, flint, or chert; however, it is probable that breathing any dust may be harmful. The most harmful dust is that in which the particles have sharp or needlelike edges and are so small that they can not be seen by the naked eye.

The main causes of dust in the air of metal mines are dry drilling, shooting, or the mucking or handling of dry material.

The minute particles of dust remain suspended for several hours in the still air so frequently found at working places. Hence, it is extremely important to take measures to prevent dust formation, and to remove dust immediately, or to allay it where its formation can not be prevented.

Much of the burden of eliminating dust rests on the mine management, but the attitude of the workers has a vital influence; and as the worker is the most vitally benefited, his influence should be thrown in favor of anything and everything to curb the dust menace. Instead of resisting the introduction of wet stopers, he should aid in their installation and successful use. Further, he should use water sprays regularly with dry stopers; should use hose freely when equipped for sprinkling; and should use ventilating doors, tubing, and other regulators as directed, instead of cutting, blasting, or wantonly destroying them in some way, as is often done.

There is no doubt that many workers in our metal mines to-day are in poor health because of their opposition to using practices and equipment designed to help them. These workers should remember that, while the employer has undoubted responsibility in providing for health and safety, they can determine to a large degree by their attitude whether the remedies adopted will be of actual benefit.

DANIEL HARRINGTON,
Supervising Mining Engineer, United States Bureau of Mines.



Sixth month

JUNE

30 Days

MOON'S PHASES.	EASTERN TIME.			MOON'S PHASES.	EASTERN TIME.		
	D.	H.	M.		D.	H.	M.
First Quarter.....	2	1	10.1 P. M.	Last Quarter.....	17	7	3.2 A. M.
Full Moon.....	9	10	57.9 A. M.	New Moon.....	24	11	19.7 P. M.

Day of month.	Day of week.	SAFETY HINTS AND HISTORICAL EVENTS.	Sun rises.	Sun sets.
			A. M.	P. M.
1	Thu.	Metal miners should avoid rock dust.	4.37	7.19
2	Fri.		4.36	7.19
3	Sat.		4.36	7.20
4	Sun.		4.36	7.21
5	Mon.	Registration of all males in United States 21 to 31 years of age, under Draft Act, 1917.	4.35	7.21
6	Tue.	Fine sharp particles of rock dust when inhaled into the lungs cause miner's consumption.	4.35	7.22
7	Wed.		4.35	7.23
8	Thu.	Granite Mountain shaft fire, Butte, Mont., 1917; dead, 163.	4.34	7.23
9	Fri.		4.34	7.24
10	Sat.	President Harding approved the Budget Act, 1921.	4.34	7.24
11	Sun.	Stenches in compressed air are used to warn miners.	4.34	7.25
12	Mon.	Metal miners must learn the importance of ventilation.	4.34	7.25
13	Tue.		4.34	7.26
14	Wed.	National Flag Day.	4.34	7.26
15	Thu.	Washington chosen head of American Army, 1775.	4.34	7.27
16	Fri.		4.34	7.27
17	Sat.		4.34	7.27
18	Sun.	Khartisk, Russia, mine diasaster, 1905; 500 killed.	4.34	7.28
19	Mon.		4.34	7.28
20	Tue.		4.34	7.28
21	Wed.	American Army lands in Cuba, 1898.	4.34	7.28
22	Thu.		4.34	7.29
23	Fri.	Be temperate in your habits.	4.35	7.29
24	Sat.		4.35	7.29
25	Sun.	Keep down dust; use the water spray.	4.35	7.29
26	Mon.		4.36	7.29
27	Tue.	Learn all exits from a mine.	4.36	7.29
28	Wed.		4.36	7.29
29	Thu.		4.37	7.29
30	Fri.	Metal mines require ventilation as well as coal mines.	4.37	7.29

Rock dust injures the lungs. Use wet stopers and avoid it.

TYPHOID FEVER.

Typhoid fever is a preventable disease. Its prevention rests on well-known facts that every miner should understand. The cause of typhoid fever is a small germ. These germs are thrown off in the discharges from the bowels and kidneys of persons who have the disease, who are recovering from it, or who have had it in the past. Typhoid germs enter the body in only one way; that is, through the mouth. When any one has typhoid fever it means that the person affected has eaten or drunk something containing typhoid fever germs. In plain words, the person sick with typhoid has swallowed something containing human filth.

Food, fingers, and flies are the most important agencies through which typhoid fever is spread. Food, which includes milk and water, may be contaminated in various ways. Wells, springs, and other sources of drinking water are usually polluted directly by filth from insanitary privies or from sewers.

Milk, which itself is an ideal medium for the growth of many germs, may be infected by the addition of water containing the germs of typhoid.

The hands are chiefly important in spreading typhoid fever when they are used in handling or nursing cases of the disease. Persons nursing cases of typhoid should always be careful to wash the hands after handling the patients. All bedclothes from a case of typhoid fever should be put in an antiseptic solution immediately after removal from the bed.

Flies are also a means by which filth from the open privy may be brought to the food.

The prevention of typhoid fever may be accomplished by taking the following precautions:

1. Installing and maintaining sanitary privies or sewers.
2. Protecting the water and milk supply.
3. Protecting foodstuffs from contamination.
4. Destroying flies and their breeding places.
5. Protective inoculation against typhoid.

GOOD ADVICE.

Thirty-five cents is a small sum, but with it any miner can make an investment that will pay him incalculable returns for the money spent. With this amount he can make a purchase that will preserve his health, aid in protecting him against several diseases, give him a feeling of cleanliness, and improve his appearance as nothing else will do.

This investment is safe and is recommended to all miners. Buy a toothbrush and use it daily.



Seventh month

JULY

31 Days

MOON'S PHASES.	EASTERN TIME.			MOON'S PHASES.	EASTERN TIME.		
	D.	H.	M.		D.	H.	M.
First Quarter.....	1	5	51.9 P. M.	New Moon.....	24	7	47.1 A. M.
Full Moon.....	8	10	7.3 P. M.	First Quarter.....	30	11	21.6 P. M.
Last Quarter.....	17	12	11.0 A. M.				

Day of month.	Day of week.	SAFETY HINTS AND HISTORICAL EVENTS.	Sun rises.	Sun sets.
1	Sat.	Americans engage Spaniards in battle at El Caney and San Juan Hill, Cuba, 1898.	A. M. 4.38	P. M. 7.29
2	Sun.		4.38	7.29
3	Mon.	Congressional resolution declaring peace with Germany signed by President Harding, 1921.	4.38	7.29
4	Tue.	Independence Day. National holiday.	4.39	7.29
5	Wed.		4.40	7.29
6	Thu.	Boil your drinking water if you think it not clean.	4.40	7.29
7	Fri.		4.41	7.28
8	Sat.	Be sure your milk is good.	4.41	7.28
9	Sun.		4.42	7.28
10	Mon.		4.42	7.27
11	Tue.	Former President W. H. Taft takes oath of office as Chief Justice of the United States Supreme Court, 1921.	4.43	7.27
12	Wed.	Prophylactic inoculation has banished typhoid fever from the United States Army.	4.44	7.27
13	Thu.	Joseph A. Holmes, first director of United States Bureau of Mines, died, 1915.	4.44	7.26
14	Fri.	Alfred Nobel invented dynamite, 1868.	4.45	7.26
15	Sat.		4.46	7.25
16	Sun.	Build sanitary privies and prevent typhoid fever.	4.47	7.25
17	Mon.		4.47	7.24
18	Tue.		4.48	7.23
19	Wed.		4.49	7.23
20	Thu.	Mine disaster, Toyooka, Japan, 1907; 400 lives lost.	4.50	7.22
21	Fri.	American troops take Château-Thierry from Germans, 1918.	4.50	7.21
22	Sat.		4.51	7.21
23	Sun.		4.52	7.20
24	Mon.		4.53	7.19
25	Tue.	Typhoid fever is a filth-borne disease.	4.54	7.18
26	Wed.		4.55	7.18
27	Thu.		4.55	7.17
28	Fri.	Polluted drinking water is one way typhoid fever is spread.	4.56	7.16
29	Sat.		4.57	7.15
30	Sun.		4.58	7.14
31	Mon.	Welongong, Australia, mine disaster, 1902; 120 dead.	4.59	7.13

Clear, sparkling water is not necessarily pure.

SAFETY—A COMMON MEETING GROUND.

In the fight for safety there are no differences of position or pay. Bosses and workmen must share the responsibility, for, if either falters in bearing his part, accidents and sickness will bring suffering and, possibly, death.

The miner's duty to himself and his family is to keep himself healthy and uninjured. The company's duty to the miner and the miner's family is to provide safe and healthful working conditions. The company is responsible for proper ventilation of working faces, for the installation of proper safeguards to dangerous machinery, and for the instruction of miners so that they may do their work safely. The miner's responsibility is that of being careful, of doing his work without taking chances, of being certain that no thoughtless or careless deed will result in injury to a fellow worker.

Viewed in a cold, practical way, accidents cost money. But accidents mean more than financial loss to the company. After an accident, when families are grouped about a mine, staring with tear-filled eyes at the mouth of the shaft and wondering if their "man" has been killed, they have the instant sympathy of the officials of the company who share with them the common grief. Accidents always bring suffering, but it is suffering that is felt by all.

The time to realize this is before the accident happens. Accidents that can be prevented do not have to happen. But, if they are to be prevented, miners and bosses must work together and must each share the responsibility.

The work to prevent sickness and accidents is a common meeting-ground on which everyone, from the lowest-paid worker to the highest-paid executive, must stand shoulder to shoulder as men fighting the same battle against injury and disease.

F. J. BAILEY,

Assistant to the Director, United States Bureau of Mines.

SAVE SOMETHING.

During the World War all miners and their families had impressed upon them in many ways the need of thrift and saving. For some, the lesson remains with them and they are continuing to save and lay aside something; others have forgotten this lesson and are spending freely all they earn.

When work is plenty and pay is good, always remember the need of thrift, for a time may come when work will be scarce and pay smaller.

Making money is easy; saving money requires skill and thrift. Lay aside something every pay day.



MOON'S PHASES.

EASTERN TIME.

	D.	H.	M.
Full Moon.....	7	11	18.7 A. M.
Last Quarter.....	15	3	45.8 P. M.

MOON'S PHASES.

EASTERN TIME.

	D.	H.	M.
New Moon.....	22	3	34.0 P. M.
First Quarter.....	29	6	54.9 A. M.

Day of month.	Day of week.	SAFETY HINTS AND HISTORICAL EVENTS.	Sun rises.	Sun sets.
1	Tue.	Every miner owes it to his fellow workers to be careful.	A. M.	P. M.
2	Wed.		5.00	7.12
3	Thu.		5.01	7.11
4	Fri.	Columbus sailed from Spain, 1492.	5.02	7.09
5	Sat.	First cable message across Atlantic Ocean, 1857.	5.02	7.09
6	Sun.	Make "Safety" your motto.	5.03	7.08
7	Mon.	Accidents are costly; avoid them.	5.04	7.07
8	Tue.		5.05	7.06
9	Wed.	Do not decry expert knowledge; heed it.	5.06	7.05
10	Thu.		5.07	7.03
11	Fri.	Science has no enemy save the ignorant.	5.08	7.02
12	Sat.		5.09	7.01
13	Sun.	New German constitution proclaimed, 1919.	5.10	7.00
14	Mon.	Gold discovered in Alaska, 1896.	5.11	6.59
15	Tue.	Panama Canal opened to navigation, 1914.	5.11	6.57
16	Wed.	Nothing can be accomplished without calculation.	5.12	6.56
17	Thu.		5.13	6.55
18	Fri.		5.14	6.53
19	Sat.	Save some of your earnings.	5.15	6.52
20	Sun.		5.16	6.51
21	Mon.	Cooperate heartily in all safety work.	5.17	6.49
22	Tue.	Compasses were used by the Chinese over 3,000 years ago.	5.18	6.48
23	Wed.		5.19	6.46
24	Thu.	Keep clear of switches and trolley wires in mines.	5.20	6.45
25	Fri.	Nineteenth amendment to United States Constitution proclaimed, 1920 (Woman Suffrage).	5.21	6.44
26	Sat.		5.21	6.42
27	Sun.	Drake drove first oil well in America, in Pennsylvania, 1859.	5.22	6.41
28	Mon.		5.23	6.39
29	Tue.	Plan to save a certain amount every pay day.	5.24	6.38
30	Wed.		5.25	6.36
31	Thu.		5.26	6.35
			5.27	6.33

Safety methods pay both miner and mine operator.

WHAT WILL BE YOUR CONDITION A YEAR FROM NOW?

Do you know that in the United States every year 3,000 men are killed in mines and 200,000 are injured? And, further, do you know that more than half of these deaths and injuries are caused by the carelessness of those killed and injured or are due to the carelessness of fellow employees?

Will you, one year hence, be among those 3,000 silent ones who have passed to the Great Beyond, or will you be numbered among those 200,000 living proofs of the work of the great demon **Carelessness**? We trust you will be absent from both groups, but your absence will depend greatly upon your own choice of conduct.

No man in his right mind deliberately invites personal injury but, as the above figures show, many men fail to avoid injury deliberately. Your keeping a sound body through life depends on your asserting your rightness of mind by most deliberately avoiding places and conditions liable to cause you injury.

"Safety First" is a very short phrase, but if properly applied it has a world of possibilities. "Safety First" is the worst enemy of old demon **Carelessness**, and is a good friend to you. It stands for the exercise of foresight in anticipating dangerous conditions so they may be avoided. It recognizes known causes of accidents as probable causes of like accidents, and points to the necessity of remedying such causes. It suggests that your good judgment be kept ever on the alert to sense hazards, to correct them if possible, and, if they can not be corrected or eliminated, to stay away from them and warn others to do likewise.

"Safety First" places on you an obligation to protect your own body and limbs from injury. If you accept this obligation as good practice for your own protection, it must also be good practice for your fellow employees and you should enlist the interest of those who labor with you for "Safety First." No matter how careful you may be, if some fellow worker fails to observe the rules of safety, you may be the one to suffer. Be a whole-hearted "Safety First" booster. Think "Safety First," talk "Safety First," and act "Safety First" in your work, at home, and on the streets.

You are counted on to do your level best to cut down the number of monuments erected to **Carelessness**. Do your share and encourage others to join you in eliminating preventable accidents, thus saving loss of time and wages, preventing needless disability and suffering, and making unnecessary the anguish and grief of wives, kiddies, and other loved ones.

ARTHUR L. MURRAY,
Car Surgeon, United States Bureau of Mines.



MOON'S PHASES.		EASTERN TIME.		MOON'S PHASES.		EASTERN TIME.		
		D.	H.	M.		D.	H.	M.
Full Moon.....	6	2	47.2	A. M.	New Moon.....	20	11	38.3 P. M.
Last Quarter.....	14	5	20.0	A. M.	First Quarter.....	27	5	40.4 P. M.

Day of month.	Day of week.	SAFETY HINTS AND HISTORICAL EVENTS.	Sun rises.	Sun sets.
			A. M.	P. M.
1	Fri.	Help destroy the demon, carelessness.	5.28	6.32
2	Sat.		5.29	6.30
3	Sun.		5.30	6.29
4	Mon.	Labor Day.	5.31	6.27
5	Tue.	Russo-Japanese War ended, 1905.	5.31	6.26
6	Wed.		5.32	6.24
7	Thur.	Health is man's credit at the bank of life.	5.33	6.23
8	Fri.		5.34	6.21
9	Sat.		5.35	6.19
10	Sun.	Perry's victory over British on Lake Erie, 1813.	5.36	6.18
11	Mon.		5.37	6.16
12	Tue.		5.38	6.15
13	Wed.	American troops wipe out remainder of St. Mihiel salient, 1918.	5.39	6.13
14	Thur.	Destructive storm and tidal wave at Corpus Christi, Tex., 1919.	5.39	6.11
15	Fri.		5.40	6.10
16	Sat.		5.41	6.08
17	Sun.		5.42	6.07
18	Mon.	"Think first" is the practical application of "safety first."	5.43	6.05
19	Tue.		5.44	6.02
20	Wed.		5.45	6.03
21	Thur.		5.46	6.00
22	Fri.		5.47	5.59
23	Sat.	The safety movement is beyond the experimental stage.	5.48	5.57
24	Sun.		5.48	5.55
25	Mon.		5.49	5.54
26	Tue.		5.50	5.52
27	Wed.	Bulgarians ask for armistice and terms of peace, 1918.	5.51	5.51
28	Thur.		5.52	5.49
29	Fri.		5.53	5.47
30	Sat.	Be a better miner and a more careful miner.	5.54	5.46

Make the mine a safe place in which to work.

TAKING CHANCES.

"I'll get it when it's coming to me, why worry?" is the way many men look at warnings of accidents. But these "why worry" fellows are the ones who are most apt to be "bumped off". Maybe they believe in Fate, saying that their life history is all mapped out, and that they are scheduled to pass on at a certain hour of a certain day, and that nothing they can do in the meanwhile makes any difference.

The fact that some of these men have escaped death by a hair on previous occasions may give strength to this belief, but it won't prevent them from getting caught when they've taken one chance too many. The dare-devils will get caught sooner or later, whether they take chances in mines, airplanes, or submarines. The law of averages is always working, day and night.

There was once a miner who used to hop the cages, whether they stopped at his level or not. One day he was a little slow; he was buried a few days later. Fate had nothing to do with this accident. The miner simply took one chance too many.

It may be possible to escape unhurt for a while, but if you wish to live to see your children grow to manhood and womanhood, play the game safely. Let those who have no responsibilities take the chances. If you have a family, remember that every time you take a chance your family is right alongside, taking the same chance.

E. B. SWANSON,
United States Bureau of Mines.

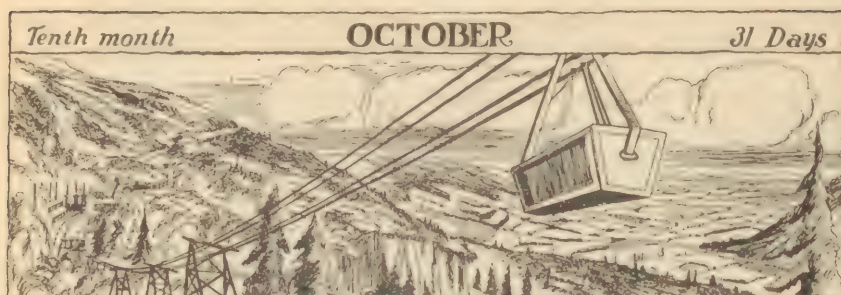
CATARRH.

The term catarrh, as used by the general public and by miners, is so very broad that it may mean almost anything. Usually the term is employed in connection with any disturbance of the ears, nose, or throat. Catarrh is a symptom. The condition that people designate as catarrh may in reality be a symptom of one of a number of diseases.

Numerous conditions are said to be caused by catarrh: Disturbed breathing, or a stuffiness in the nose, a dripping in the back of the nose and throat, susceptibility to colds, ringing in the ears; in fact, almost any disturbance of the nose or throat may be called catarrh.

The symptoms that are designated as catarrh may be due to enlarged or deformed nasal bones, improper bending of the cartilage of the nose, injuries, as from the kick of a mule or a blow from a fall or rock, or to the presence of pus germs in the cavities—called sinuses—of the bones of the face.

Miners who have the symptoms usually ascribed to catarrh should consult a reliable nose and throat specialist. Considerable relief and oftentimes permanent cures are effected by taking the proper treatment, especially surgical treatment.



MOON'S PHASES. EASTERN TIME.

MOON'S PHASES. EASTERN TIME.

	D.	H.	M.
Full Moon.....	5	7	58.3 P. M.
Last Quarter.....	13	4	55.4 P. M.

	D.	H.	M.
New Moon.....	20	8	40.2 A. M.
First Quarter.....	27	8	26.4 A. M.

Day of month.	Day of week.	SAFETY HINTS AND HISTORICAL EVENTS.	Sun rises.	Sun sets.
			A. M.	P. M.
1	Sun.	No miner has the right to endanger the lives of his fellow workers.	5. 55	5. 44
2	Mon.		5. 56	5. 43
3	Tue.		5. 57	5. 41
4	Wed.		5. 58	5. 40
5	Thu.	Taking chances is foolish and dangerous.	5. 59	5. 38
6	Fri.		6. 00	5. 36
7	Sat.		6. 01	5. 35
8	Sun.		6. 02	5. 33
9	Mon.		6. 03	5. 32
10	Tue.	Anglo-Boer War began, 1899.	6. 04	5. 30
11	Wed.	Argonne Forest completely cleared of Germans by American troops, 1918.	6. 04	5. 29
12	Thu.		6. 05	5. 27
13	Fri.		6. 06	5. 26
14	Sat.	Mine disaster, Senghenydd, Wales, 1913; dead, 423.	6. 07	5. 24
15	Sun.		6. 08	5. 23
16	Mon.		6. 09	5. 21
17	Tue.		6. 10	5. 20
18	Wed.	A diseased condition of the nose or throat often causes susceptibility to colds.	6. 12	5. 19
19	Thu.		6. 13	5. 17
20	Fri.		6. 14	5. 16
21	Sat.	Carelessness invites accidents.	6. 15	5. 14
22	Sun.	Stag Canon mine disaster, Dawson, N. Mex., 1913; dead, 263.	6. 16	5. 13
23	Mon.	Americans advance on 15-mile front north of Bantheville, 1918.	6. 17	5. 12
24	Tue.		6. 18	5. 10
25	Wed.		6. 19	5. 09
26	Thu.		6. 20	5. 08
27	Fri.	Get with the right crowd; boost for safety.	6. 21	5. 07
28	Sat.		6. 22	5. 05
29	Sun.		6. 23	5. 04
30	Mon.		6. 24	5. 03
31	Tue.	Diseased tonsils frequently cause other diseases to develop.	6. 25	5. 02

The road to the cemetery is paved with careless acts.

COOPERATION BETWEEN THE UNITED STATES BUREAU OF MINES AND THE NATIONAL SAFETY COUNCIL.

One of the most important and far-reaching steps toward the maintaining of safety in mines during the past year has been a cooperative agreement entered into between the United States Bureau of Mines and the National Safety Council. Through this cooperation an engineer from the Bureau of Mines has been loaned to the National Safety Council for the purpose of disseminating information on safety among the mine operators of the United States, acting as a clearing house for safety-service information.

In spite of all that can be done by the mining companies to prevent accidents, the main accident-preventive measures depend decidedly on each individual miner, be he mucker, miner, or general superintendent. Unless carelessness can be eliminated, accidents will happen. Carelessness on your part or on the part of your fellow workmen should never be tolerated. Prudent miners will seek employment only in those mines that have adopted the best plan of accident prevention and, having obtained employment, will insist that their fellow workmen consider safety and safety measures, not as mere trifles but as a vital part of their everyday life.

C. LORIMER COLBURN,

Mining Engineer, United States Bureau of Mines.

COLDS.

The prevention of colds, grippe, and influenza, is accomplished by the same general measures. These diseases are contagious and are spread by coughing, sneezing, using the same drinking glasses, the same towels, or by coming in contact in some other manner with the secretion from the nose or mouth of a person who is sick with the disease, or who has apparently recovered but is still throwing off the germs.

Human sputum or spit is probably the principal means of spreading these diseases. Therefore, in their prevention there are two things to be done.

1. Avoid coming in contact with the spit from any other person.
2. Keep the body robust and healthy.

To avoid contact with spit from other persons, considerable care must be exercised, as human spit is always carelessly disposed of and often is unconsciously spread on many articles with which we come in contact. Working tools, drinking cups, handkerchiefs, towels, are all common objects by which spit is spread.

Persons who have recurring colds or who are very susceptible to colds should have a careful examination made of the mouth, nose, and throat. Adenoids, diseased tonsils, or bone blocking of the nostrils are sometimes responsible for the tendency to catch colds easily.



MOON'S PHASES.

EASTERN TIME.

MOON'S PHASES.

EASTERN TIME.

	D.	H.	M.	P. M.		D.	H.	M.	P. M.
Full Moon.....	4	1	36.5		New Moon.....	18	7	6.4	
Last quarter.....	12	2	52.5	A. M.	First Quarter.....	26	3	15.0	A. M.

Day of month.	Day of week.	SAFETY HINTS AND HISTORICAL EVENTS.	Sun rises.	Sun sets.
			A. M.	P. M.
1	Wed.		6.26	5.01
2	Thur.	President Warren G. Harding born, 1865.	6.27	4.59
3	Fri.	Austria surrenders to the Allies, 1918.	6.28	4.58
4	Sat.	Sleep with fresh air in your room.	6.30	4.57
5	Sun.		6.31	4.56
6	Mon.		6.32	4.55
7	Tue.	Passage of German peace envoys to French headquarters arranged, 1918.	6.33	4.54
8	Wed.	Avoid all kinds of excesses.	6.34	4.53
9	Thur.		6.35	4.52
10	Fri.	Wear clothing suited to the weather.	6.36	4.51
11	Sat.	German envoys sign armistice terms, 1918. Armistice Day.	6.37	4.50
12	Sun.	Mine disaster at Hamm, Germany, 1908; dead, 300.	6.38	4.49
13	Mon.	Work in as much fresh air as possible.	6.40	4.49
14	Tue.		6.41	4.48
15	Wed.	Brazil proclaimed a Republic, 1889.	6.42	4.47
16	Thur.		6.43	4.46
17	Fri.	Cherry, Ill., mine fire, 1909; dead, 259.	6.44	4.45
18	Sat.		6.45	4.45
19	Sun.		6.46	4.44
20	Mon.	Colds are catching.	6.47	4.43
21	Tue.	Avoid sudden chilling of the body.	6.48	4.43
22	Wed.		6.50	4.42
23	Thur.	Always cover a cough or sneeze.	6.51	4.42
24	Fri.		6.52	4.41
25	Sat.		6.53	4.41
26	Sun.	Albert B. Fall, Secretary of the Interior, born 1861.	6.54	4.40
27	Mon.		6.55	4.40
28	Tue.	Serious consequences sometimes follow colds.	6.56	4.40
29	Wed.		6.57	4.39
30	Thur.	Thanksgiving Day.	6.58	4.39

The U. S. Bureau of Mines gives free training in mine-rescue and first-aid work.

HEALTH SUPERVISION OF SCHOOL CHILDREN.

Miners' children not only should have sanitary and comfortable school buildings, but should have their health looked after. Studies of the physical condition of children in many places have shown that large numbers of them have physical defects which had been unrecognized and unsuspected. Many of the defects thus shown are preventable and remediable. If they are not remedied they result not only in reducing individual efficiency, but also in reducing national efficiency, as was so clearly shown during the World War by the high percentage of American citizens found unfit for military service by the physical examinations made under the selective-service law. The conditions under which children assemble in school, and not the school itself, are largely responsible for much of the sickness contracted during school life and for the persistence of physical defects. The control of adverse conditions during this period not only has an immediate beneficial influence on the health of the children, but serves to teach them most effectively the principles of personal hygiene, the nonobservance of which is now believed to be mainly responsible for the large annual increase in the number of deaths from degenerative diseases later in life.

The demands of a reasonable medical inspection of school children are met by the following observances: (1) To examine for the presence of physical or mental defects which make it inadvisable for certain children to attend school; (2) to measure and weigh all children to determine the average physical development by sex and 1-year age periods, and the utilization of such standards as an index of nutrition and as a guide to the discovery of harmful causes in the case of children who do not develop normally; (3) to discover, remove, and prevent defects of dentition, hearing, posture, and vision that hamper children in school work and retard their physical and mental development; (4) to aid the health authorities in the control of communicable diseases.

TALIAFERRO CLARK,

Surgeon, United States Public Health Service.

THERE IS NO ARMISTICE WITH VENEREAL DISEASE.

In the fight for safety and better health miners should remember that venereal diseases (gonorrhea and syphilis) cause much loss of time and money as well as untold suffering and misery. These diseases are preventable and miners should avoid them.

Join now in the campaign to make our country free of these destructive and costly diseases.



MOON'S PHASES.		EASTERN TIME.			MOON'S PHASES.		EASTERN TIME.		
		D.	H.	M.			D.	H.	M.
Full Moon.....		4	6	23.6 A. M.	New Moon.....	18	7	20.0 A. M.	
Last Quarter.....		11	11	40.7 A. M.	First Quarter.....	26	12	53.1 A. M.	

Day of month.	Day of week.	SAFETY HINTS AND HISTORICAL EVENTS.	Sun rises.	Sun sets.
1	Fri.	Fortunate is the mining town that has a whole-time health officer.	A. M. 6.59	P. M. 4.39
2	Sat.		7.00	4.38
3	Sun.		7.01	4.38
4	Mon.	The mining company can not keep a camp clean unless everyone helps.	7.02	4.38
5	Tue.		7.03	4.38
6	Wed.	Monongah mine disaster, W. Va., 1907; dead, 361.	7.04	4.38
7	Thu.		7.05	4.38
8	Fri.	Venereal diseases often hide behind the screen of false modesty.	7.06	4.38
9	Sat.		7.07	4.38
10	Sun.		7.07	4.38
11	Mon.	Marconi signals letter "S" across Atlantic Ocean by wireless, 1901.	7.08	4.38
12	Tue.	Peace declared between United States and Spain, 1898.	7.09	4.38
13	Wed.	All cases of venereal disease should be treated until completely cured.	7.10	4.38
14	Thu.	Laying of Pacific cable begun at San Francisco, 1902.	7.10	4.39
15	Fri.		7.11	4.39
16	Sat.	Help the health officer in every way possible.	7.12	4.39
17	Sun.		7.13	4.39
18	Mon.		7.13	4.40
19	Tue.	Darr mine disaster, Pennsylvania, 1907; dead, 239.	7.14	4.40
20	Wed.	Landing of Pilgrims at Plymouth, Mass., 1620.	7.14	4.41
21	Thu.	Mine disaster at Bolton, England, 1910; 300 killed.	7.15	4.41
22	Fri.		7.15	4.42
23	Sat.	Keep up the fight against venereal diseases.	7.16	4.42
24	Sun.		7.16	4.43
25	Mon.	Christmas Day. National holiday.	7.17	4.43
26	Tue.		7.17	4.44
27	Wed.		7.18	4.44
28	Thu.	Keep clean, mentally, morally, and physically.	7.18	4.45
29	Fri.	Chinese Republic proclaimed, 1911.	7.18	4.46
30	Sat.	Iroquois Theater fire, Chicago, 1903; lives lost, 575.	7.18	4.47
31	Sun.	Has the past year been worth while?	7.19	4.47

Protect the health of your children.

THE ADVANCE OF SAFETY.

How many people ever stop to think of the differences between the safety movement of to-day and the safety movement of 15 or 20 years ago? Then, it was a catchword, used only by a few far-sighted men, who foresaw that before results could be accomplished the movement for greater safety must become contagious and spread among the men actually engaged in the industry. Most of us used to ignore the true meaning of safety and we took chances according to our individual judgment and temperament. At best, safety seemed something apart from the every day working of a mine and an ideal that could be reached only by sacrificing some of the skill and effectiveness we wished to put into our work.

Now, in all well-conducted mining operations the safety movement has come to stay. In designing every successful piece of machinery engineers recognize the importance of safety features as well as the amount of money that may be saved by using it. No installation of apparatus is attempted without safety being considered equally with saving of time and labor. No method of mining, whether underground or surface, can be given a trial until everyone is satisfied that safety is preserved.

For this change in attitude, you miners are largely responsible. You no longer think it "yellow" not to work under dangerous conditions, when such conditions may be remedied. You have shown appreciation of all the companies' expenditures that make mines a safer and better place to work in, and, best of all, you have taken that continued personal interest in the movement for greater safety without which progress would have been impossible.

E. A. HOLBROOK,

Assistant Director, United States Bureau of Mines.

EVERY MINER SHOULD STUDY FIRST AID.

There is nothing in the entire career of the mine worker that is more important than a diligent study of mine-rescue and first-aid methods. Under auspices of the United States Bureau of Mines, instructions have been given to coal miners in hundreds of mines throughout the country, and the bureau is anxious to cooperate with the miners everywhere so that they may become efficient in the work of rendering first aid to their injured fellow workers.

United Mine Workers' Journal.

WET STOPING DRILLS VERSUS DRY STOPING DRILLS.

The introduction of machine drills in mines and the improvement and development of the drills into the stopers now used have been accompanied by a decided increase in cases of miners' consumption. Especially is this true of hammer-type drills. The cry for faster drilling, more ore, and lower costs has spurred the makers of these machines to improve them and has led employers to put them into use. Little was thought of the effect on the health of miners using machine drills until the hammer-type drill was put on the market.

Examination of 720 men in the Joplin district, Missouri, developed the following facts: 25 per cent of the men were well, 46 per cent had miners' consumption, and 15 per cent had tuberculosis in addition to miners' consumption. In South Africa, out of 3,181 men examined 1,009 were infected. In Butte, Mont., of 1,018 examined 398, or 39 per cent, had miners' consumption, 42 of whom also had tuberculosis.

To overcome the dust from drilling many devices have been suggested, among them being a spray of water at the collar of the hole and the use of a respirator. The spray did not prove a success, especially in flat dipping holes, and the respirator put on the market was so inconvenient that it was almost impossible to get a miner to wear one.

Development of the self-rotating hammer drills using hollow drill steel and feeding water through the bit has revolutionized rock drilling and solved the dust problem in flat holes. Not until recently has this principle been applied to the stoping drill, chiefly, perhaps, because the drill had to be bigger and heavier and additional connections were necessary. It was supposed that these features would condemn the drill among miners, but they have not in those Utah mines where the wet stoping drill has been tried out.

Three lead-silver mines in Utah have been experimenting with different types of wet stoping drills with complete success. They have proved that the wet stopes drill faster than the dry stoping machines, but they are a little heavier and require better stagings.

Less danger to the miners' health and faster drilling are facts that practically assure the universal adoption of wet stoping drills, provided everybody cooperates.

We all know the terrible toll of death and disease from rock dust and lead particles. We now have wet machines that are practicable for every kind of drilling. So let us quit doing so much talking and actually put them into use—**everywhere**.

C. A. ALLEN,

Mining Engineer, United States Bureau of Mines.

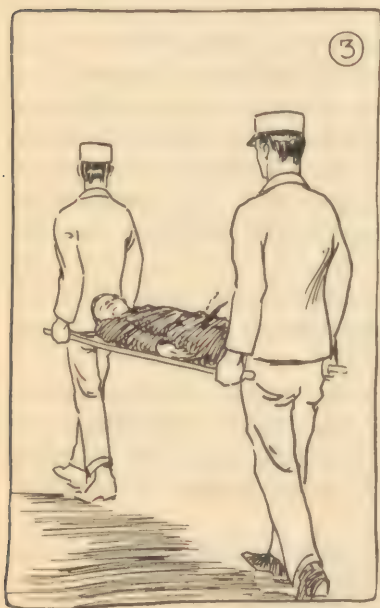
KEEP THE WATCHDOG AWAKE.

Some people walk in their sleep. Such people are rare, but anybody can do things without knowing how he is doing them. Do you put on your right or your left shoe first? Do you button your clothes with your right or left hand? Few people are conscious of how they do customary actions, and the reason why is because all our actions are under two sets of control, just as the spark plugs of an automobile are under two sets of control. When you start your machine you start it on battery to get a strong spark, but after it is running you switch to magneto, because that is automatic and saves draining the battery, which is a more delicate apparatus. The first time you do an act your conscious mind directs it, because there is need of careful attention, but after you have done it many times, like buttoning your clothes or putting on your shoes, the unconscious mind takes it over, and the spinal cord directs it, thus relieving the brain, which is a much more delicate structure than the spinal cord. In much the same way things are done about a plant; when something new is started the manager or superintendent devotes a good deal of time to looking after it, but after it is established and running smoothly he depends on some one whose time is less valuable to look after it.

Turning over our customary actions to the spinal cord to direct involves the same hazard as arises in turning over the supervision of a process to a man who does not understand it as well as the man who started it. Some unusual situation arises that calls for special attention and the routine supervisor is not prepared to give it. Then an accident happens. A man goes up and down a ladder day after day until he does it automatically. One day there is a broken round; he doesn't notice it and falls. He passes beneath a trolley wire daily; one day it is hanging down; he doesn't notice it and gets a shock.

How can such accidents be prevented? Only by keeping the senses alert and ready to take command on the instant when there is any change in the normal conditions. Train your eye to see and your ear to hear anything unusual and you may save yourself a serious injury.

THOMAS T. READ,
*Chief, Division of Education and Information,
United States Bureau of Mines.*



The movie of a careless miner. Test your roof.

WHAT THE METAL MINER MAY DO TO SAVE HIMSELF AND COMPANIONS AT TIME OF A MINE FIRE.

Much has been written on the rescuing of miners from fires in metal mines, but little instruction has been given to the individual miner on what he should do to save himself. If uninstructed as to the dangers from the poisonous gases from a mine fire, he usually rushes to the nearest exit and perhaps loses his way or is overcome by the deadly fumes. More men have lost their lives from gas than from burns. The most deadly gas is tasteless, odorless, and invisible; it is known as carbon monoxide, and is usually given off when wood or other material is burning in a confined space. It is found especially in places where no air is moving, such as in dead-end drifts, stopes, or raises. An atmosphere containing 100 parts of carbon monoxide to 10,000 parts of air is sure death to anyone breathing it for a few minutes.

When miners are warned of a mine fire, if there is a compressed-air line nearby, every valve should be opened to furnish as much fresh air as possible. All fire doors should be closed between the fire and the miners, and if the air is not too smoky or gassy, the miners should go to the nearest emergency exit and climb to the surface.

If, however, they are cut off from an emergency exit, they should immediately try to bulkhead themselves in a dead end where there is a compressed-air line, first turning on the valve (the stanches used as signals in compressed-air lines are absolutely harmless) and then making a stopping of lagging, timber canvas, or rock plastered with mud to keep out the poisonous gases from the fire. Frequent signals to the outside should be made by pounding with a sledge or pick on the back of the rock or on the air line. All lamps, cigarettes, pipes, or cigars should be extinguished in order to keep the air in condition fit to breathe.

If there is no compressed-air line, the men should sit or lie on the floor quietly in order to breathe as little air as possible, and they should, above all things, keep calm.

A miner on top should not go into smoke or gas to rescue miners unless he is trained to wear oxygen mine-rescue apparatus, and then never alone. There is no other apparatus that can be safely used in mine fires. Army gas masks, smoke masks, or handkerchiefs over the mouth are useless.

Knowledge in the use of mine-rescue apparatus will make a man familiar with the dangers of fire gases and will also teach him what to do when caught underground in a mine fire.

BYRON O. PICKARD,

Mining Engineer, United States Bureau of Mines.

CARBON-MONOXIDE POISONING.

Carbon-monoxide poisoning is caused by breathing atmospheres that contain carbon monoxide. This gas is found at the blast furnaces, flues, and bag houses of a smelter; and also about oil refineries, in exhaust gases from gasoline engines, in illuminating gas, and at coke ovens. In mines it is found after fires, after explosions, and after the use of explosives. Miners sometimes call it white damp, or sweet damp, but carbon monoxide itself is odorless, colorless, and tasteless, and the sweet odor sometimes attributed to it is not due to the carbon monoxide but to other substances in the atmosphere which accompany this gas. Carbon monoxide can be detected, however, by the use of small animals, such as mice, or canaries, or by the use of a carbon-monoxide detector—a chemical apparatus developed as a result of studies made during the World War.

Miners are vitally interested in the acute form of carbon-monoxide poisoning, the symptoms of which are headache, dizziness or giddiness, a feeling of tiredness, weakness in the knees, and palpitation of the heart; later, the victim becomes unable to walk, or walks only with a staggering gait, falls to the ground and is unable to rise, becomes unconscious, has depressed respiration, and may die.

The chief factors in preventing carbon-monoxide poisoning are the following: (1) Good ventilation, as this will carry away and dilute the gas when present; (2) avoiding as much as possible any exposure to air known to contain monoxide; (3) keeping calm, when one must enter the gas or is exposed to it, not hurrying, but getting to fresh air as quickly and with as little exertion as possible.

A person who has been exposed to the gas long enough to show symptoms of poisoning should rest in fresh air or, preferably, should breathe oxygen for 10 or 20 minutes. The breathing of oxygen soon after breathing carbon monoxide often relieves all symptoms, even though they are marked. If a miner has been rescued from gases containing carbon monoxide and is not breathing, or his breathing is very slow and shallow, artificial respiration by the Schaefer method, supplemented by the use of oxygen, should be applied and persisted in until he has thoroughly recovered or until a physician arrives. After recovery, the patient should be kept warm and at rest in bed for several hours, in order to avoid all strain on the heart at this time.

R. R. SAYERS,

*Chief Surgeon, United States Bureau of Mines,
Passed Assistant Surgeon, United States Public Health Service.*

"AM I MY BROTHER'S KEEPER?"

Almost from the beginning of the world, the question "Am I my brother's keeper?" has been asked over and over again, and perhaps too often the answer has been "No."

The miner probably more than anyone else should put this question to himself and he should without hesitation answer, "Yes!" Why? Because, putting aside all ideas of humanity, the answer affects his most vital nerve, the tenderest part of his being. No; not his heart, nor his stomach, but his pocketbook. Every man injured in a mine adds just so much to the high cost of living.

Because of the compensation laws in many States the miner may think the operator alone bears the burden. But the cost of carrying the compensation is charged by the operator to the cost of the coal. So, when the miner buys a pair of shoes, his wife buys a dress, or his children buy candy, the cost of the coal which is used to make steam for running the machinery of the factory which makes the shoes, dress, or candy is again added to the price of the shoes, dress, or candy, and, of course, comes out of the miner's pay envelope.

Am I my brother's keeper? If I am careless and don't post up the slate and my buddy is killed, don't I have to pay for it in cold cash? Sure. Then I'll be my brother's keeper.

Am I my brother's keeper? I don't report a bad place in the man-way! It comes down and kills the fellow that I don't like. I pay for his family's keep in cold cash. Sure, I'll be my brother's keeper and report any danger. Why? Because it's money in my pocket.

I see a green man loading coal under a chunk of draw slate. It's none of my business! If he gets hurt it's only one less. What's the difference? The difference is just this: My next suit of clothes is going to cost just that much more, because the compensation paid to this greenie's widow is added to the price of the coal at the tippie.

So, for the sake of my own pocketbook, I have resolved to report any dangerous places, to warn anyone whom I see working under dangerous conditions, and also to "practice what I preach."

In 1920 there were 2,011 men killed in the bituminous coal mines in this country, and of that number 1,127, or more than half, were killed by "falls." And it is safe to say that by a miner's being either his own keeper or his brother's keeper, a very large number of these dead men would be living to-day.

The average compensation paid for deaths is not far from \$2,500 each, so that by these 2,011 men being killed, over \$5,000,000 was added to the cost of the coal at the tippie.

Does it "pay" to be my brother's keeper? I'll say it does!

L. D. TRACY,

Coal Mining Engineer, United States Bureau of Mines.



Miners' good-health calendar.

PERMISSIBLE EXPLOSIVES.

By permissible explosives is meant those explosives only whose quality is certified by the Federal Government, through the Bureau of Mines. They aggregate about 9 per cent of all the explosives used for industrial purposes in the United States.

The chief use of permissible explosives is in coal mines, as they are so made that they may be relatively safe for use in the presence of gas and dust. Also, they are less sensitive to detonation by percussion, friction, flame, and electricity than other high explosives and black blasting powder.

The strength and the safety characteristics of permissible explosives make them suitable for metal mining and quarrying, railroad, and other construction work. For these purposes in 1919 there were used more than 15 per cent of the total permissible explosives produced.

Permissible explosives have to pass certain tests at the explosives experiment station of the Bureau of Mines at Bruceton, Pa., where a plant for making these tests is maintained. Chemical tests are made in the laboratories of the bureau at Pittsburgh, Pa. The tests are equal to severe mining conditions. To meet the standard set by the bureau, the quality of a permissible explosive must remain uniform.

The relative safety of these explosives for use in the presence of gas and coal dust is determined by firing charges into dangerous gas and coal-dust mixtures.

The bureau has set a limit on the quantity of poisonous gases that may be evolved on the detonation of a permissible explosive.

The results of the tests are published from time to time in order that users of permissible explosives may be kept informed as to the strength and other characteristics of the explosives.

The value of the testing of these explosives by the Bureau of Mines is indicated by the way coal-mine fatalities due to explosives have decreased as the use of permissible explosives has increased. For instance, in bituminous coal mines between 1903 and 1910 the deaths due to explosives were never less than 2 per 10,000 men employed; after 1910 the fatalities were never more than 1.38 per 10,000; and in 1917, the fatalities were only 0.91 per 10,000, a decrease of over 50 per cent as compared with the rate from 1903 to 1910.

S. P. HOWELL,

Explosives Engineer, United States Bureau of Mines.

**IF—**

If he had worn goggles and protected his eyes, he would not be blind.

If he had obeyed the Safety First rules posted up all over the mine, he would not have lost his hand.

If he had not lighted the match in gas, the mine explosion would not have occurred.

If he had only left alcohol alone, he would not have disgraced himself and ruined his health.

If he had not tried horseplay on the cage, he would not have been hurt.

If he had tested his roof, he would not have been killed by the fall of rock.

If he had watched his step, he would not have fallen down the ladder.

If he had used common sense, he would not have opened a can of powder with a pick.

If he had not lost his temper, he would not have lost his job.

If he had only been careful, neither he nor his fellow workers would have been injured.

If he had known first-aid work, he could have saved an injured comrade's life.

If he had consulted a doctor in time, his health might have been saved.

Of course, some risks are necessary, but how much loss and remorse a habit of caution and a pair of wide-open eyes would save miners.

From "If," by Dr. Frank Crane, adapted for miners.

BUREAU OF MINES RESCUE CARS AND SAFETY STATIONS.

For properly carrying out its mine rescue and first-aid work, the Bureau of Mines has divided the United States, so far as the organization of the work is concerned, into nine districts. Each district is served by a mine rescue car and the majority of the districts have bureau safety stations and bureau mine rescue trucks as well.

In case of mine disaster wire the Bureau of Mines, Pittsburgh, Pa.

District "A."—Pennsylvania, New York, New Jersey, and the New England States:

Mine Rescue Car No. 3, headquarters, Pittsburgh, Pa.

Mine Rescue Truck, headquarters, Pittsburgh, Pa.

Mine Safety Station, Pittsburgh, Pa.

Mine Safety Station, Wilkes-Barre, Pa.

District "B."—Ohio, Kentucky, Virginia, West Virginia, Maryland, and Delaware:

Mine Rescue Car No. 5, headquarters, Pittsburgh, Pa.

Mine Rescue Car No. 8, headquarters, Huntington, W. Va.

Mine Safety Station, Norton, Va.

Mine Rescue Truck, headquarters, Norton, Va.

District "C."—Louisiana, Tennessee, North Carolina, South Carolina, Alabama, Georgia, Florida, and Mississippi:

Mine Rescue Truck, headquarters, Birmingham, Ala.

Mine Safety Station, Birmingham, Ala.

Mine Safety Station, Knoxville, Tenn.

District "D."—Indiana, Illinois, Iowa, and a part of Michigan:

Mine Rescue Car No. 7, headquarters, Des Moines, Iowa.

Mine Rescue Car No. 6, headquarters, Terre Haute, Ind.

Mine Safety Station, Vincennes, Ind.

Mine Safety Station, Evansville, Ind.

Mine Rescue Truck, headquarters, Vincennes, Ind.

Mine Rescue Truck, headquarters, Evansville, Ind.

District "E."—North Dakota, South Dakota, Minnesota, Wisconsin, and a part of Michigan:

Mine Rescue Car No. 10, headquarters, Ironwood, Mich.

District "F."—Nebraska, Kansas, Missouri, Arkansas, Oklahoma, and Texas:

Mine Rescue Car No. 4, headquarters, Pittsburg, Kans.

Mine Safety Station, McAlester, Okla.

District "G."—Colorado, Arizona, and New Mexico:

Mine Rescue Car No. 2, headquarters, Raton, N. Mex.

District "II."—Montana, Washington, Idaho, Wyoming, and Utah.

Mine Rescue Car No. 11, headquarters, Rock Springs, Wyo.

Mine Rescue Truck, headquarters, Seattle, Wash.

Mine Safety Station, Seattle, Wash.

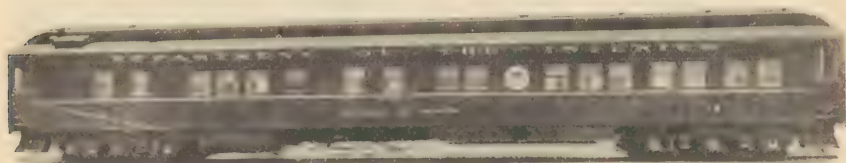
District "I."—Oregon, California, and Nevada:

Mine Rescue Car No. 1, headquarters, Reno, Nev.

Mine Safety Station, Berkeley, Calif.

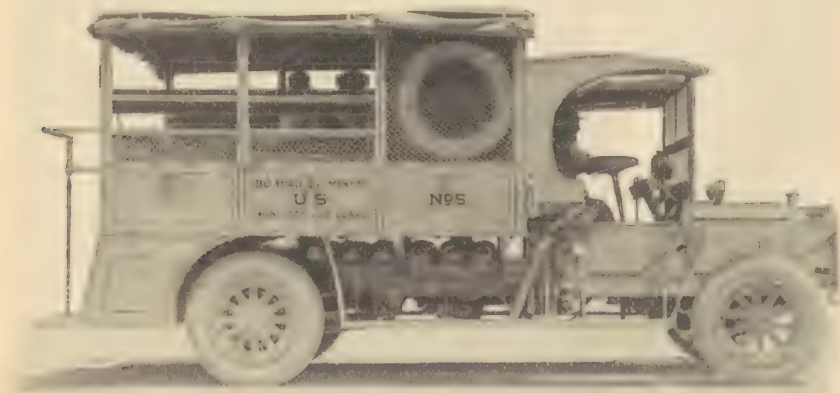
Mine Rescue Truck, headquarters, Berkeley, Calif.

Cars 1, 2, 5, 10, and 11 are all-steel cars purchased since 1917. Cars 3, 4, 7, and 8 are converted Wagner sleeping cars. These cars were equipped with steel underframes in 1917. Car 6 is also a wooden car, equipped with steel underframe, and was secured from the United States Public Health Service in 1920.



New all-steel mine rescue car of the Bureau of Mines.

A mine safety station is equipped with first-aid supplies, rescue apparatus, and other safety devices. A motor truck is used to transport the crew of the station and the necessary equipment to various parts of the district for the training of classes in first aid or for rescue work at mine disasters.



Mine rescue truck of the Bureau of Mines.



Interior view of mine rescue car.



Miners at work underground wearing oxygen breathing apparatus.

FAMOUS LAST WORDS OF FOOLISH MINERS.

Typical sayings spoken just before the Fool Killer used his ax:

"I wonder if this is a live wire. I'll touch it and see."

"It is against the rules to strike matches in this mine. But I am going to do it."

"I know this is dynamite, but an experienced miner, as I am, does not need to be so careful."

"Here is a 'Danger' sign. Watch me go on past it and find out the trouble."

"I don't care if the sign does say this ladder is not safe. I am in a hurry and haven't time to go around."

"Cap crimpers are toys for kids; see me use my teeth."

"There comes the trip. Wonder if I can get across the track ahead of it."

"All the talk about this mine being full of gas is bunk. I am going to open my safety lamp and light it."

"There's only one way to manage a mine mule. Walk right up in back of him and surprise him."

"Don't care if smoking is not allowed in this mine. I just must have a smoke now."

"What a funny noise that is, sounds like a gas feeder. Think I will strike a match and see."

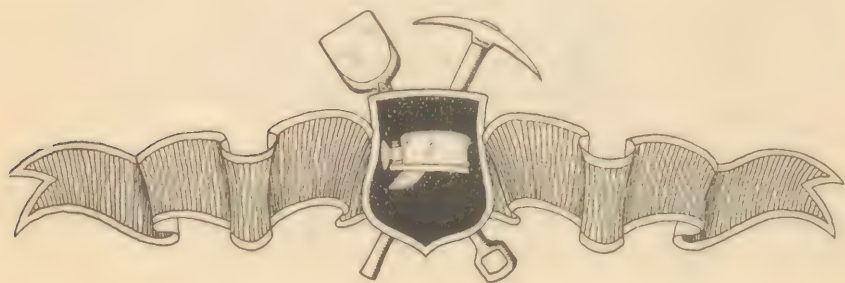
"This must be a missed shot. I'll dig in and find out."

"Seems that I smell smoke. Go ahead, I am not afraid of mine gases and fires."

"These safety guys make me tired. It is too much trouble to test out this breathing apparatus."

"I don't need a safety line; this is easy."

"This roof looks bad but I'll risk it."





Postal Savings—

A WISE MINER.

A wise miner works and saves—

If he would guard against want.

If he would give his children a good education.

If he would provide for sickness or a rainy day.

If he would provide for any possible stopping or reduction in his wages.

If he would have a home.

If he would take advantage of some opportunity in the future.

If he would enjoy a comfortable and happy old age.

After the mind is made up to save, it is of the greatest importance to select an absolutely safe and secure place to deposit the money. If it is carried in the pockets, there will be a temptation to spend it. To hide it in the cupboard, under some bricks, under the corner of the carpet or in cans, is to risk loss from burglary or fire, and the money so hidden is kept from trade or business. If all the money in hiding or carried needlessly on the person were placed in the banks and by them made to work, living costs would be reduced at once.

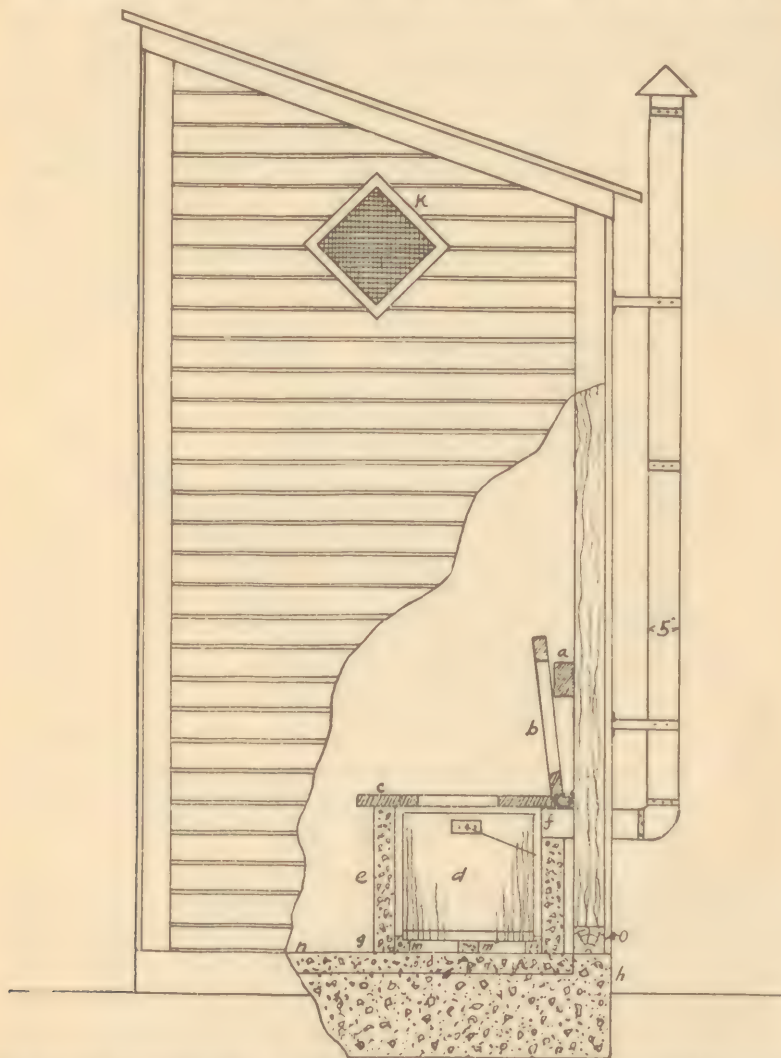
A house is built a brick at a time; a dollar or more savings regularly soon builds a fund to be used whenever needed. The quickest way to get rid of poverty is to work hard and steadily, and save earnestly and regularly. Every miner with a savings account is a better citizen, a greater value to the community and to his neighbors; he becomes a better miner and a more reliable employee.

The United States Government through the Postal Savings provides an absolutely safe and convenient means for the saving and safe-keeping of money. The faith and credit of the Government are pledged to the repayment of the deposit on demand and interest at regular intervals.

Call on your local postmaster. He will be glad to furnish you detailed information as to how easily accounts may be opened, their absolute safety, the ease with which money may be withdrawn, and the rate of interest paid.

CONSTRUCTION OF A SANITARY CONCRETE PRIVY BOX FOR PRIVY WITH CONCRETE FLOOR.

The installation of a concrete floor in new or existing privies will not only repay the owner by a saving in repair bills but will be much

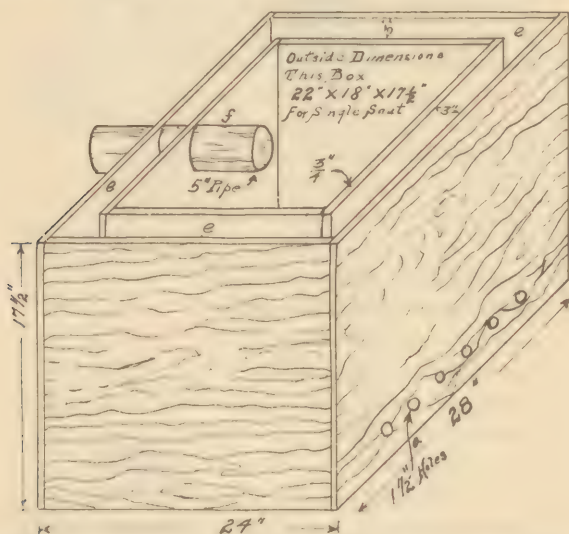


Sketch showing the changes made in existing privy building to conform to concrete standard. *a*, Block to make seat self-closing; *b*, cover; *c*, seat; *d*, galvanized pail; *e*, concrete box; *f*, vent pipe of galvanized metal, screened at *f*; *g*, location of vent holes; *h*, wall; *k*, screened vent; *m*, concrete blocks keeping can from contact with paved floor; *n*, paved floor; *o*, 2 by 4 sill.

more sanitary than the old wood floor and box. In addition the concrete floor and box will be rodent proof and to a certain extent vermin proof.

As most mining camps already have some type of privy this article will deal with the remodeling of these buildings to conform to the concrete type.

Begin the work by the installation of the foundation wall. This wall, while serving as a support for the privy, will also protect the concrete floor margin against the ingress of rats and other rodents beneath. Select any side of the privy building and cut off the woodwork 1 foot above the ground level. With a narrow spade dig a trench the length of the side, 6 inches wide and 18 inches or 2 feet deep. Fill in with a good mixture of concrete (1 part cement, 3 parts sand, and 4 parts gravel or broken brick) to the ground level.



Sketch showing the construction of the forms for the concrete privy-box. *a*, 1½-inch holes fitted with pegs before pouring concrete; *c*, concrete poured in this space; *f*, pipe of the same diameter as vent pipe forming hole for vent. This hole is covered with screen wire after the forms are removed.

The wall can then be brought up to the cut-off line of the building with brick, or if desired concrete can be used by employing forms. This process is to be repeated on all sides of the privy. For sills, a 2 by 4 placed on the wall to which all the upright timbers are fastened will answer very well. When this is completed all woodwork of the building will be at least 1 foot above the ground, thereby eliminating all chance of deterioration. Wall is shown at *h*, page 45.

The concrete floor (*n*, p. 45) should be at least 3 inches thick and finished with a half-inch layer of cement. Surface of the floor should be level with the top of the wall. If desired, four small lugs can be set into the floor to keep the box in place; the weight of the box, however, will be sufficient to accomplish this end.

Wood forms for making the concrete box are shown on page 46. These forms should be made of three-fourths-inch material. If a number of the boxes are to be made, forms should be fastened together with bolts or clamps in order that they may be dismantled and set up repeatedly.

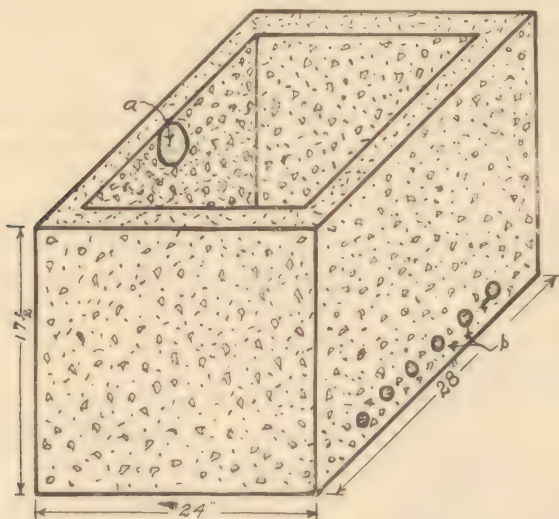
Dimensions of form.

The *inside* dimensions of the larger form (can 15 inches by 15 inches) should be as follows:

	Single seat.	Double seat.
Length (inches).....	28½	53
Breadth (inches).....	24	24
Depth (inches).....	17½	17½

The *outside* dimensions of the smaller form to be:

Length (inches).....	22	} Use two forms with same dimensions as for single seat.
Breadth (inches).....	18	
Depth (inches).....	17½	



Sketch showing the concrete box after the forms have been removed.

a, Hole for 5-inch vent pipe; *b*, hole for ventilation. Both *a* and *b* to be screened with copper wire gauze not coarser than 14-mesh, securely cemented to the inside of the box.

Forms are placed on a level surface and so spaced that the space (*e*, p. 46) is equal at all points—3 inches. A small piece of the vent pipe or other pipe of the same outside diameter is passed through both forms as at *f*, page 46. About 1 inch from the bottom of the form a number of 1½-inch holes are bored and fitted with wood pegs that pass entirely through the forms. Concrete is then poured into the space *e*, tamping well around the pegs and the piece of pipe *f*. When the concrete is nearly set the pegs and pipe can be removed, leaving in the one case a row of vent holes and in the other a properly

sized hole for the vent pipe *f*, page 46. After concrete has thoroughly set the forms are removed and the entire surface of the box given a smooth finish of cement. This does not apply, of course, to the inner surface of the vent pipe hole as any additional material at this point may make the vent pipe difficult to fit. The holes at the bottom of box and the vent pipe hole must be screened with copper gauze wire of not greater than 14 mesh to the inch. These screens can be securely cemented in place on the inside of the box.

The lid of the box *c* also forms the seat for the privy. It is fastened in place with strap hinges. It must be of sound lumber and project at least 1 inch over front and both sides of box. In order to render the closing of this seat fly tight, strips must be nailed on the under side in such a position that the closing of the lid will cause them to fit snugly along the inner edge of the box. Front edge of seat hole should be at least 6 inches back from the front edge of seat.

Seat cover (*b*, p. 45) is fastened with strap hinges and should overlap the hole at least 3 inches at all points. The block of wood *a* prevents the cover from reaching a perpendicular position and so renders it self-closing.

Small concrete blocks *m*, about three-fourths inch high, allow a circulation of air beneath the can, preventing condensation of moisture. They also serve to keep the can in place.

The ventilation flue of galvanized iron should be at least 5 inches in diameter and should extend about 1 foot above the roof of the privy. It can be fastened to the building with galvanized straps as shown.

The can should be of galvanized iron, 22-gauge, 15 inches in diameter and 15 inches high.

The collection of night soil should be done by the company or public scavenger. The final disposition of the night soil is as important as the construction of the sanitary privy. Night soil should not be accessible to insects, fowl, or stock, nor be likely to come in contact with persons during or after removal.

If a sewer system is available, a good method of disposal is to dump into a sewer. In case a sewer system is not within reach, burial in the ground is usually the simplest and best method. Burial in the ground may be accomplished by plowing a furrow, emptying the material in the furrow, and then covering with another furrow. The incineration of night soil with garbage and rubbish is the most satisfactory method. Every mining camp should have an adequate incinerator.



BULLETIN

WHAT EVERY MINING TOWN NEEDS AND WHY

HEALTH

Installation of sanitary privies and sewer connections to prevent spread of filth-borne diseases

Plenty of clean water and proper protection of water supply to prevent typhoid fever, dysentery, and similar diseases

Effective collection and disposal of garbage

Elimination of manure piles, open privies, and other places where flies breed

Drainage of all water that may furnish breeding places for mosquitoes

Supervision of all milk and foodstuffs offered for sale

General spirit of interest and cooperation in matters of health and sanitation

A whole-time health organization to supervise and improve local health conditions

SAFETY

Adequate surface fire-fighting equipment for town to protect lives and property

Street signs warning against speeding or careless driving

Public playgrounds for children, to keep them off the streets

Gates at all railroad crossings, to prevent accidents and death

Mine rescue station and apparatus for use in case of mine disaster or fire.

A good first-aid organization.

More miners to own their homes.

Every miner to have a savings account and save for the future

Help from every one to make the town a better place in which to live

EDUCATION

Clean, well-kept school buildings and grounds, the children deserve the best schools that can be obtained

Sufficient number of competent and well-paid teachers to conduct the schools properly.

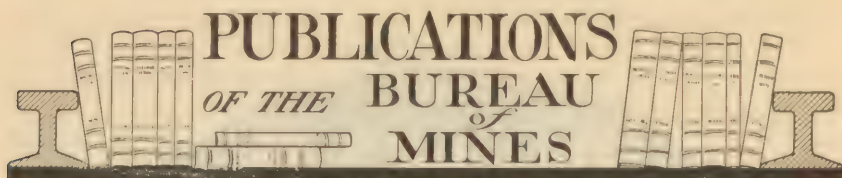
Public library to encourage more reading of better books and periodicals.

Proper health supervision of all school children to improve their health and physical condition.

Enforcement of quarantine measures to exclude from school all children having communicable diseases so as to protect children not sick with such diseases.

Sanitary drinking fountains, proper heating, lighting, ventilation, lavatories, and toilets for all schools.

Compulsory attendance of all children of school age for a certain number of days each year.



PUBLICATIONS ON SAFETY AND SANITATION.

A complete list of the publications issued by the Bureau of Mines may be obtained by addressing the Director, Bureau of Mines, Washington, D. C.

The following is a partial list of publications dealing with sanitation and safety which are available for free distribution.

BULLETINS.

Bulletin 17. A Primer on Explosives for Coal Miners, by C. E. Munroe and Clarence Hall. 1911.

Bulletin 80. A Primer on Explosives for Metal Miners and Quarrymen, by C. E. Munroe and Clarence Hall. 1915.

Bulletin 87. Houses for Mining Towns, by J. H. White. 1914.

Bulletin 93. Miners' Nystagmus, by F. L. Hoffman. 1916.

Bulletin 132. Siliceous Dust in Relation to Pulmonary Disease in the Joplin District, Missouri, by Edwin Higgins, A. J. Lanza, F. B. Laney, and G. S. Rice. 1917.

Bulletin 139. Control of Hookworm Infection at the Deep Gold Mines of the Mother Lode, California, by J. G. Cumming and J. H. White. 1917.

TECHNICAL PAPERS.

Technical Paper 11. The Use of Mice and Birds for Detecting Carbon Monoxide after Mine Fires and Explosions, by G. A. Burrell. 1912.

Technical Paper 21. The prevention of Mine Explosions: Report and Recommendations, by Victor Watteyne, Carl Meissner, and Arthur Desborough. 1912.

Technical Paper 30. Mine-Accident Prevention at Lake Superior Mines, by D. E. Woodbridge. 1913.

Technical Paper 59. Fires in Lake Superior Iron Mines, by Edwin Higgins. 1913.

Technical Paper 75. Permissible Electric Lamps for Miners, by H. H. Clark. 1914.

Technical Paper 82. Oxygen Mine Rescue Apparatus and Physiological Effects on Users, by Yandell Henderson and J. W. Paul. 1917.

Technical Paper 84. Methods of Preventing and Limiting Explosions in Coal Mines, by G. S. Rice and L. M. Jones. 1915.

Technical Paper 97. Saving Fuel in Heating a House, by L. P. Breckenridge and S. B. Flagg. 1915.

Technical Paper 102. Health Conservation at Steel Mills, by J. A. Watkins. 1916.

Technical Paper 103. Organizing and Conducting Safety Work in Mines, by H. M. Wilson and J. R. Fleming. 1917.

Technical Paper 116. Miners' Wash and Change Houses, by J. H. White. 1915.

Technical Paper 132. Underground Latrines for Miners, by J. H. White. 1916.

Technical Paper 150. Limits of Complete Inflammability of Mixtures of Mine Gases and Industrial Gases with Air, by G. A. Burrell and A. W. Gauger. 1917.

Technical Paper 153. Occurrence and Mitigation of Injurious Dusts in Steel Works, by J. A. Watkins. 1917.

Technical Paper 156. Carbon Monoxide Poisoning in the Steel Industry, by J. A. Watkins. 1917.

Technical Paper 167. Men Who Received Bureau of Mines Certificates of Rescue Training, July 1, 1914, to June 30, 1916, compiled by D. J. Parker. 1917.

Technical Paper 190. Methane Accumulations from Interrupted Ventilation. With Special Reference to Coal Mines in Illinois and Indiana, by H. I. Smith and R. J. Hammon. 1918.

Technical Paper 229. Accident Prevention in the Mines at Butte, Mont., by Daniel Harrington. 1920.

Technical Paper 248. Gas Masks for Gases Met in Fighting Fires, by A. C. Fieldner, S. H. Katz, and S. P. Kinney. 1921.

Technical Paper 251. Ventilation in Metal Mines, a Preliminary Report, by Daniel Harrington. 1921.

Technical Paper 260. Miners' Consumption at Butte, Mont., by Daniel Harrington. 1921.

MINERS' CIRCULARS.

Miners' Circular 4. The Use and Care of Mine-Rescue Breathing Apparatus, by J. W. Paul. 1911.

Miners' Circular 5. Electrical Accidents in Mines. Their Causes and Prevention, by H. H. Clark, W. D. Roberts, L. C. Ilsley, and H. F. Randolph. 1911.

Miners' Circular 7. Use and Misuse of Explosives in Coal Mining, by J. J. Rutledge, with a preface by J. A. Holmes. 1913.

Miners' Circular 9. Accidents from Falls of Roof and Coal, by G. S. Rice. 1912.

Miners' Circular 10. Mine Fires and How to Fight Them, by J. W. Paul. 1912.

Miners' Circular 11. Accidents from Mine Cars and Locomotives, by L. M. Jones. 1912.

Miners' Circular 12. Use and Care of Miners' Safety Lamps, by J. W. Paul. 1913.

Miners' Circular 13. Safety in Tunneling, by D. W. Brunton and J. A. Davis. 1913.

Miners' Circular 14. Gases Found in Coal Mines, by G. A. Burrell and F. M. Seibert. 1913.

Miners' Circular 16. Hints on Coal-Mine Ventilation, by J. J. Rutledge. 1914.

Miners' Circular 17. Accidents from Falls of Rock and Ore, by Edwin Higgins. 1914.

Miners' Circular 18. Notes on Miners' Carbide Lamps, by J. W. Paul. 1915.

Miners' Circular 19. The Prevention of Accidents from Explosives in Metal Mining, by Edwin Higgins. 1914.

Miners' Circular 20. How a Miner Can Avoid Some Dangerous Diseases, by A. J. Lanza and J. H. White. 1915.

Miners' Circular 21. What a Miner Can Do to Prevent Explosions of Gas and of Coal Dust, by G. S. Rice. 1915.

Miners' Circular 22. Dangerous and Safe Practices in Bituminous Coal Mines, by Edward Steidle. 1919.

Miners' Circular 23. Elementary First Aid for the Miner, by W. A. Lynott and Daniel Harrington. 1916.

Miners' Circular 27. Causes and Prevention of Fires and Explosions in Bituminous Coal Mines, by Edward Steidle. 1920.

HANDBOOKS.

Manual of First-Aid Instruction for Miners, a Report on Standardization, by a Committee of Surgeons: G. H. Halberstadt, A. F. Knoefel, W. A. Lynott, W. S. Rountree, and M. J. Shields, revised by R. R. Sayres. 1921.

Rescue and Recovery Operations in Mines After Fires and Explosions, by J. W. Paul and H. M. Wolfkin. 1916.

CHARTS.

Resuscitation from Gas Asphyxiation, Drowning, and Electric Shock, compiled by Yandell Henderson. 1919.

Chart of Properties of Mine Gases, by G. A. Burrell. 1918.

PUBLICATIONS THAT MAY BE OBTAINED ONLY FROM THE SUPER-INTENDENT OF DOCUMENTS, GOVERNMENT PRINTING OFFICE, WASHINGTON, D. C., AT THE PRICES NOTED.

Technical Paper 24. Mine Fires, a Preliminary Study, by G. S. Rice. 1912. 5 cents.

Technical Paper 33. Sanitation at Mining Villages in the Birmingham District, Ala., by D. E. Woodbridge. 1913. 5 cents.

Technical Paper 39. The Inflammable Gases in Mine Air, by G. A. Burrell and F. M. Seibert. 1913. 5 cents.

Technical Paper 56. Notes on the Prevention of Gas and Dust Explosions in Coal Mines, by G. S. Rice. 1913. 5 cents.

Technical Paper 77. Report of the Committee on Resuscitation from Mine Gases, by W. B. Cannon, G. W. Crile, Joseph Erlanger, Yandell Henderson, and S. J. Meltzer. 1914. 5 cents.

Technical Paper 105. Pulmonary Disease in the Joplin District, Missouri, and Its Relation to Rock Dust in the Mines, by A. J. Lanza and Edwin Higgins. 1915. 10 cents.

Miners' Circular 24. Miners' Safety and Health Almanac for 1919, by R. C. Williams. 1918. 10 cents.

Miners' Circular 26. Miners' Safety and Health Almanac for 1920, by R. C. Williams. 1919. 10 cents.

Miners' Safety and Health Almanac, 1921, by R. C. Williams, 1920. 5 cents.

PUBLICATIONS OF THE UNITED STATES PUBLIC HEALTH SERVICE.

The following publications of the United States Public Health Service are of interest to miners. They may be obtained by addressing the Surgeon General, United States Public Health Service, Washington, D. C.

KEEP WELL SERIES:

1. The Road to Health.
3. How to Avoid Tuberculosis.
4. Diphtheria.
6. Cancer Facts Which Every Adult Should Know.
8. Motherhood.
9. Breast Feeding Her Baby.
10. Bottle Feeding for Babies.

PUBLIC HEALTH BULLETINS:

37. The Sanitary Privy: Its Purpose and Construction.
42. Disinfectants: Their Use and Application in the Prevention of Communicable Diseases.
68. Safe Disposal of Human Excreta at Unsewered Homes.
69. Typhoid Fever: Its Causation and Prevention.
70. Good Water for Farm Homes.
89. A Sanitary Privy System for Unsewered Towns and Villages.
102. A Homemade Milk Refrigerator.
103. The Rat: Arguments for Its Elimination and Methods for Its Destruction

SUPPLEMENTS:

5. Fighting Trim: The Importance of Right Living.
10. The Care of the Baby.
11. What the Farmer Can Do to Prevent Malaria.
14. Diphtheria: Its Prevention and Control.
16. The Summer Care of Infants.
29. Transmission of Disease by Flies.
31. Safe Milk: An Important Food Problem.

HOUSE-FLY POSTER.

HANGING CARD.—Eighteen Rules for Right Living.

VENEREAL DISEASE BULLETINS:

- Pamphlet "A," for young men.
Pamphlet "B," for the general public.
Pamphlet "C," for boys.
Pamphlet "D," for parents.
Pamphlet "E," for girls and young women.
Pamphlet "F," for educators.



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